

## REMARKS/ARGUMENTS

Reconsideration and withdrawal of the rejections of the application are respectfully requested in view of the amendments and remarks herewith, which place the application into condition for allowance.

### **I. STATUS OF THE CLAIMS AND FORMAL MATTERS**

Claims 21-31 and 33-48 are pending in this application. Claims 23-27, 29-30, and 37-39 are withdrawn. Claims 32 and 49 have been canceled. Independent claim 31 has been amended without prejudice. No new matter has been introduced. Support for this amendment can be found throughout the Application as originally filed. Changes to claims are not made for the purpose of patentability within the meaning of 35 U.S.C. § 101, § 102, § 103, or § 112. Rather, these changes are made simply for clarification and to round out the scope of protection to which Applicants are entitled.

### **II. THE REJECTIONS UNDER 35 U.S.C. § 102(b) HAVE BEEN OVERCOME**

Claims 21, 31-33, and 36 were rejected under 35 U.S.C. § 102(b) over Japanese Patent Application No. JP2002277478 to Takehiko et al. ("Takehiko"). Applicants traverse and respectfully request reconsideration and withdrawal of the rejections for at least the following reasons.

Claim 21 recites:

A device comprising first and second inlet passages for respective immiscible fluids, the first and second inlet passages merging into a third passage along which, in use, **the two fluids flow under parallel laminar flow conditions**, the third passage being formed with **a constriction or other discontinuity, in use, causing the two fluids to form into a flow of alternate segments**. (Emphasis added)

Takehiko discloses a device with a solution flow of several segmented solutions (1-5) within a micro-channel 30. *Takehiko, Abstract and Fig. 1*. However, Takehiko fails to disclose “two fluids flow[ing] under **parallel laminar flow conditions**” followed by “a **constriction or other discontinuity**... causing the two fluids to form into a flow of alternate segments” as recited in claim 21. As Takehiko’s micro-channel 30 and intake arms 20A, 20B do not disclose either “two fluids flow[ing] under **parallel laminar flow conditions**” or “a **constriction or other discontinuity**,” that **causes** “the two fluids to form into a flow of alternate segments,” Applicants respectfully submit that claim 21 is not anticipated by Takehiko. This is evident by observing Fig. 1 of Takahiko. For example, Takahiko’s intake arms 20A, 20B are Y-shaped and therefore unable to generate “two fluids flow[ing] under **parallel laminar flow conditions**.” Moreover, an observation of Takehiko’s micro-channel 30 further confirms the absence of any “**constriction or other discontinuity** [that causes] the two fluids to form into a flow of alternate segments.” For at least the foregoing reasons, Applicants respectfully submit that independent claim 21 is patentable over the relied upon portions of Takehiko, and is therefore allowable.

Claim 31 recites:

A method of producing a segmented flow of first and second immiscible fluids comprising providing a device with a first conduit provided with a **constriction or other discontinuity** ... wherein the **constriction or other discontinuity causes the first and second immiscible fluids to form into a flow of alternate segments downstream of the constriction or other discontinuity**, wherein the device comprises two substrates disposed face-to-face, the surface of at least one of the substrates being profiled such that the first and second inlet passages are defined between the two substrates, **wherein the substrates are encased within two or more casement layers**. (Emphasis added)

As described above, Takahiko discloses a device that produces several segmented solutions (1-5) within a micro-channel 30. Takahiko does not disclose “a constriction or other

discontinuity [that] **causes** the first and second immiscible fluids to form into a flow of alternate segments downstream of the constriction or other discontinuity,” as recited in claim 31.

Moreover, Takahiko does not disclose “two substrates” that “are **encased within two or more casement layers**,” as recited in claim 31.

For at least the foregoing reasons, Applicants respectfully submit that independent claim 31 is also patentable over the relied upon portions Takehiko, and is therefore allowable.

### III. THE REJECTIONS UNDER 35 U.S.C. § 103(a) HAVE BEEN OVERCOME

#### A. *Claims 40 and 41*

Claims 40 and 41 were rejected under 35 U.S.C. § 103(a) over Takehiko in view of U.S. Patent Application No. 200330145894 to Burns (“Burns”) and U.S. Patent No. 5,957,579 to Kopf-Sill et al. (“Kopf-Sill”). Applicants traverse and respectfully request reconsideration and withdrawal of the rejections for at least the following reasons.

Claim 40 recites:

A fluid manipulation device ... wherein said first and second ducts join to form a third duct along which, in use, the first and second fluids flow under laminar flow conditions, the third duct being formed with a **constriction, the constriction causing, in use, the first and second fluids to form into a flow of alternate segments, ...**” (Emphasis added)

As described above, Takehiko completely fails to disclose or render obvious “[a] **constriction caus[ing]**, in use, the first and second fluids **to form into a flow of alternate segments**.” As nothing in both Burns and Kopf-Sill cures the deficiency in Takehiko as applied to independent claim 40, Applicants respectfully submit that claim 40 and dependent claim 41 are each in condition for allowance and urge reconsideration and withdrawal of the rejections thereto.

***B. Claims 22 and 34***

Claims 22 and 34 were rejected under 35 U.S.C. § 103(a) over Takehiko in view of U.S. Patent No. 7,129,091 to Ismagilov et al. ("Ismagilov"). Claim 22 and 34 depend from independent claims 21 and 31, respectively. As nothing in Ismagilov cures the deficiency of Takehiko as applied to the independent claims, Applicants respectfully submit that these claims are also in condition for allowance and respectfully request reconsideration and withdrawal of the rejections thereto.

***C. Claims 28 and 35***

Claims 28 and 35 were rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Takehiko in view of U.S. Patent Publication No. 2003/30145894 to Burns ("Burns"). Claims 28 and 35 depend from independent claims 21 and 31, respectively. As nothing in Burns cures the deficiency in Takehiko, as applied to the independent claims, Applicants respectfully submit that these claims are also in condition for allowance and respectfully request reconsideration and withdrawal of the rejections thereto.

**VI. DEPENDENT CLAIMS**

Dependent claims 43-48 are also pending in this application. As none of the art of record cures the deficiency of the references as applied to the independent claims, Applicants urge that these claims are in condition for allowance and respectfully request reconsideration and withdrawal of these rejections thereto. Moreover, Applicants note that the cited references are silent on "**two or more casement layers**," as recited in the claims. Therefore, Applicants respectfully submit that claims 43-48 are also in condition for allowance.

The other claims in this application are each dependent from one of the independent claims discussed above and are therefore believed patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

### CONCLUSION

In view of the foregoing amendments and remarks, all of the claims in this application are patentable and Applicants respectfully request early passage to issue of the present application.

In the event the Examiner disagrees with any of statements appearing above with respect to the disclosures in the cited reference, it is respectfully requested that the Examiner specifically indicate those portions of the reference providing the basis for a contrary view.

The Commissioner is authorized to charge any additional fees that may be required to Deposit Account No. 50-0320.

Respectfully submitted,  
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